

$$M = \frac{(b) \left(\frac{r}{s} \right)}{1 + \frac{r}{s} (i)}$$

(Equation 10)

WHERE:	
M =	Market charge
b =	Increased borrowing cost for full period
r =	Number of days from redemption date to original maturity date
s =	Number of days in current annual period (365 or 366)
i =	Current borrowing rate expressed in decimals (discount factor)

(d) The application of this formula can be illustrated by the following example:

(1) Assume that a \$50,000 certificate of indebtedness is issued on March 1, 1987, to mature on November 1, 1987. Interest is payable at a rate of 10%.

(2) Assume that the certificate of indebtedness is redeemed on July 1, 1987, and that the current borrowing cost to Treasury for the 123-day period from July 1, 1987, to November 1, 1987, is 11.8%.

(3) The increased annual borrowing cost is \$900. $(\$50,000) \times (11.8\% - 10\%)$

(4) The market charge is computed as follows:

$$M = \frac{\$900 \left(\frac{123}{365} \right)}{1 + \left(\frac{123}{365} \right) (.118)} =$$

(Equation 11)

$$\frac{\$303.29}{1.039764384} =$$

(Equation 12)

\$291.69

(Equation 13)

APPENDIX B TO PART 344—FORMULA FOR
DETERMINING REDEMPTION VALUE
FOR SECURITIES SUBSCRIBED FOR
AND EARLY-REDEEMED ON OR AFTER
OCTOBER 28, 1996

(a) This formula results in a premium or discount to the issuer depending on whether the current Treasury borrowing rate at the time of early redemption is lower or higher

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than the stated interest rate of the early-redeemed SLGS security. The total redemption value for bonds and notes can be determined by the following two steps. First, calculate accrued interest payable in accordance with §344.6(d)(1) using the following formula:

$$AI = \left[\frac{(s-r)}{s} \right] \times \left(\frac{C}{2} \right)$$

(Equation 14)

Second, calculate the redemption value per §344.6(d)(2) using the following formula:

$$RV = \frac{\left(\frac{C}{2} \right) + \left(\frac{C}{2} \right) a_{n|} + F(v^n)}{1 + \left(\frac{r}{s} \right) \times \left(\frac{i}{2} \right)} - AI$$

(Equation 15)

WHERE:	
RV =	Redemption value
F =	Face amount redeemed
AI =	Accrued interest = [(s-r)/s] × (C/2)
r =	Number of days from redemption date to next interest payment date
s =	Number of days in current semi-annual period
i =	Treasury borrowing rate over the remaining term to maturity, based on semi-annual interest payments and expressed in decimals
C =	The regular annual interest
n =	Number of remaining full semi-annual periods from the redemption date to the original maturity date, except that, if the redemption date is an interest payment date, n will be one less than the number of full semi-annual periods remaining to maturity
v ⁿ =	1/(1 + i/2) ⁿ = present value of 1 due at the end of n periods
a _n =	(1 - v ⁿ)/(i/2) = v + v ² + v ³ + ... + v ⁿ = present value of 1 per period for n periods

(b) The application of this formula can be illustrated by the following examples:

(1) The first example is for a redemption at a premium.

(i) Assume that an \$800,000 2-year note is issued on December 10, 1996, to mature on December 10, 1998. Interest is payable at a rate of 7% on June 10 and December 10.

(ii) Assume that the note is redeemed on October 21, 1997, and that the current borrowing rate for Treasury at that time for the remaining period of 1 year and 50 days is 6.25%.

(iii) The redemption value is computed as follows. First, the accrued interest payable is calculated as:

$$AI = \left(\frac{183-50}{183} \right) \times \left(\frac{\$56,000}{2} \right)$$

(Equation 16)

$$AI = \left(\frac{133}{183} \right) \times \$28,000$$

(Equation 17)

$$AI = \$20,349.73$$

(Equation 18)

$$RV = \frac{\left(\frac{\$56,000}{2} \right) + \left(\frac{\$56,000}{2} \right) a_{\overline{n}|i} + \$800,000 v^n}{1 + \left(\frac{50}{183} \right) \left(\frac{.0625}{2} \right)} - AI$$

(Equation 19)

Then, the redemption value is calculated as:

$$RV = \frac{\left(\frac{\$56,000}{2} \right) + \left(\frac{\$56,000}{2} \right) \left[\frac{1 - \left(\frac{1}{1 + \frac{.0625}{2}} \right)^2}{\left(\frac{.0625}{2} \right)} \right] + \$800,000 \left[\frac{1}{1 + \frac{.0625}{2}} \right]}{1 + \left(\frac{50}{183} \right) \times \left(\frac{.0625}{2} \right)} - AI$$

(Equation 20)

$$RV = \frac{\$28,000 + (\$28,000)(1.9100092) + (\$800,000)(0.94031221)}{1.008538251} - AI$$

(Equation 21)

$$RV = \frac{\$28,000 + \$53,480.26 + \$752,249.77}{1.008538251} - AI$$

(Equation 22)

$$RV = \frac{\$833,730.03}{1.008538251} - AI$$

(Equation 23)

$$RV = \$826,671.70 - \$20,349.73$$

(Equation 24)

$$RV = \$806,321.97$$

(Equation 25)

(2) The second example is for a redemption at a discount and it uses the same assumptions as the first example, except the current Treasury borrowing cost is assumed to be 8.00%:

(i) Assume that an \$800,000 2-year note is issued on December 10, 1996, to mature on

December 10, 1998. Interest is payable at a rate of 7% on June 10 and December 10.

(ii) Assume that the note is redeemed on October 21, 1997, and that the current borrowing rate for Treasury at that time for the remaining period of 1 year and 50 days is 8.00%.

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(iii) The redemption value is computed as follows.

Then, the redemption value is calculated as:

First, the accrued interest payable is calculated as:

$$AI = \left(\frac{183 - 50}{183} \right) \times \left(\frac{\$56,000}{2} \right)$$

(Equation 26)

$$AI = \left(\frac{133}{183} \right) \times \$28,000$$

(Equation 27)

$$AI = \$20,349.73$$

(Equation 28)

$$RV = \frac{\left(\frac{\$56,000}{2} \right) + \left(\frac{\$56,000}{2} \right) a_{\overline{n}|} + \$800,000 v^n}{1 + \left(\frac{50}{183} \right) \left(\frac{.0800}{2} \right)} - AI$$

(Equation 29)

$$RV = \frac{\left(\frac{\$56,000}{2} \right) + \left(\frac{\$56,000}{2} \right) \left[\frac{1 - \left(\frac{1}{1 + \frac{.0800}{2}} \right)^2}{\left(\frac{.0800}{2} \right)} \right] + \$800,000 \left[\frac{1}{1 + \frac{.0800}{2}} \right]}{1 + \left(\frac{50}{183} \right) \times \left(\frac{.0800}{2} \right)} - AI$$

(Equation 30)

$$RV = \frac{\$28,000 + (\$28,000)(1.8860947) + (\$800,000)(0.92455621)}{1.010928962} - AI$$

(Equation 31)

$$RV = \frac{\$28,000 + \$52,810.65 + \$739,644.97}{1.010928962} - AI$$

(Equation 32)

$$RV = \frac{\$820,455.62}{1.010928962} - AI$$

(Equation 33)

$$RV = \$811,585.83 - \$20,349.73$$

(Equation 34)

$$RV = \$791,236.10$$

(Equation 35)

(c) The total redemption value for certificates of indebtedness can be determined by the following two steps. First, calculate accrued interest payable in accordance with §344.6(d)(1) using the following formula:

Second, calculate the redemption value per §344.6(d)(2) using the following equation:

$$AI = \left[\frac{(d-r)}{Y} \right] \times C$$

(Equation 36)

$$RV = \frac{\left(\frac{d}{y}\right) \times (C) + F}{1 + \left(\frac{r}{y}\right) \times (i)} - AI$$

(Equation 37)

WHERE:	
RV =	Redemption value
F =	Face amount redeemed
AI =	Accrued interest = $[(d-r)/y] \times C$
d =	Number of days from original issue of the certificate of indebtedness to its maturity date
r =	Number of days from redemption date to the certificate of indebtedness' maturity date
y =	365, if the number of days in the year following issue of the certificate of indebtedness does not include a leap year day; 366, if the number of days following issue of the certificate of indebtedness does include a leap year day
i =	Treasury borrowing rate over the remaining term to maturity, expressed in decimals
C =	The regular annual interest

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(d) The application of this formula can be illustrated by the following examples.

(1) First, for a redemption at a premium:

(i) Assume that a \$300,000 security is issued on December 5, 1996, to mature in 151 days on May 5, 1997. Interest at a rate of 5% is payable at maturity.

(ii) Assume that the security is redeemed on April 9, 1997, and that the current borrowing rate for Treasury at that time for the remaining period of 26 days is 4.00%.

(iii) The redemption value is computed as follows.

First, the accrued interest payable is calculated as:

$$AI = \left(\frac{151 - 26}{365} \right) \times \$15,000$$

(Equation 38)

$$AI = \left(\frac{125}{365} \right) \times \$15,000$$

(Equation 39)

$$AI = \$5,136.99$$

(Equation 40)

Then, the redemption value is calculated as:

$$RV = \frac{\left(\frac{151}{365}\right) \times \$15,000 + \$300,000}{1 + \left(\frac{26}{365}\right)(.0400)} - AI$$

(Equation 41)

$$RV = \frac{\$6,205.48 + \$300,000}{1.002849315} - AI$$

(Equation 42)

$$RV = \frac{\$306,205.48}{1.002849315} - AI$$

(Equation 43)

$$RV = \$305,335.48 - \$5,136.99$$

(Equation 44)

$$RV = \$300,198.49$$

(Equation 45)

(2) Secondly, for a redemption at a discount:

(i) Assume that a \$300,000 security is issued on December 5, 1996, to mature in 151 days on May 5, 1997. Interest at a rate of 5% is payable at maturity.

(ii) Assume that the security is redeemed on April 9, 1997, and that the current bor-

rowing rate for Treasury at that time for the remaining period of 26 days is 6.25%.

(iii) The redemption value is computed as follows.

First, the accrued interest payable is calculated as:

$$AI = \left(\frac{151 - 26}{365} \right) \times \$15,000$$

Then, the redemption value is calculated
as:

(Equation 46)

$$AI = \left(\frac{125}{365} \right) \times \$15,000$$

(Equation 47)

$$AI = \$5,136.99$$

(Equation 48)

$$RV = \frac{\left(\frac{151}{365}\right) \times \$15,000 + \$300,000}{1 + \left(\frac{26}{365}\right)(.0625)} - AI$$

(Equation 49)

$$RV = \frac{\$6,205.48 + \$300,000}{1.004452055} - AI$$

(Equation 50)

$$RV = \frac{\$306,205.48}{1.004452055} - AI$$

(Equation 51)

$$RV = \$304,848.28 - \$5,136.99$$

(Equation 52)

$$RV = \$299,711.29$$

(Equation 53)

**PART 345—REGULATIONS GOV-
ERNING 5 PERCENT TREASURY
CERTIFICATES OF INDEBTED-
NESS—R.E.A. SERIES**

Sec.

- 345.0 Offering of certificates.
- 345.1 Description of certificates.
- 345.2 Subscription for purchase.
- 345.3 Issue date and payment.
- 345.4 Redemption/reinvestment.
- 345.5 Taxation.
- 345.6 General provisions.

AUTHORITY: 31 U.S.C. 754 and 754b; 5 U.S.C. 301.

SOURCE: 38 FR 35306, Dec. 27, 1973, unless otherwise noted.

§ 345.0 Offering of certificates.

The Secretary of the Treasury, under the authority of the Second Liberty Bond Act, as amended, offers to borrowers from the Rural Electrification Administration and Rural Telephone Bank, U.S. Department of Agriculture, 5 Percent Treasury Certificates of Indebtedness—R.E.A. Series. This offering will continue until terminated by the Secretary of the Treasury.

§ 345.1 Description of certificates.

(a) *General.* The certificates of indebtedness will be issued in book-entry form on the books of the Department of the Treasury, Bureau of the Fiscal Service, Washington, DC 20226. They may not be transferred by sale, exchange, assignment or pledge, or otherwise.

(b) *Terms and rates of interest.* The certificates, bearing interest at the rate of 5 percent per annum, will be issued in multiples of \$1,000 and will mature one year from issue date. Interest on the certificates will be computed on an annual basis and, unless redeemed prior to maturity, will be payable six months from issue date and at maturity. Interest may be paid to an owner by having the amount thereof credited by a Federal Reserve Bank or Branch, acting as fiscal agent of the United States, to the reserve account of a member bank servicing such owner and for the latter's account. Such action will be taken at the owner's option. If

not exercised, payment of interest will be made by Treasury check.

[38 FR 35306, Dec. 27, 1973, as amended at 40 FR 29846, July 16, 1975]

§ 345.2 Subscription for purchase.

The recipient of a 5 percent loan from the Rural Electrification Administration or Rural Telephone Bank may subscribe for certificates under this offering, up to the amount of the unexpended portion of the loan, by submitting a subscription, together with the remittance, to the Federal Reserve Bank or Branch of the district in which the subscriber is located. The subscription form must show the amount of certificates desired, and give the title of the designated official of the subscriber authorized to redeem them.

[40 FR 29846, July 16, 1975]

§ 345.3 Issue date and payment.

The issue date of a certificate shall be the date on which the subscription form, and funds in full payment therefor, are received by the office described in § 345.2. A confirmation of the issuance, in the form of a written advice, which shall specify the amount and describe the certificates by title and maturity date, shall be issued to the subscriber.

§ 345.4 Redemption/reinvestment.

(a) *At maturity.* A certificate may not be called for redemption by the Secretary of the Treasury prior to maturity except when the amount of the unexpended portion of the loan from the Rural Electrification Administration or Rural Telephone Bank is less than the face amount of the certificate. Unless the Treasury has received from the owner, at least one week prior to the maturity date of a certificate, a written request for payment at maturity, it shall automatically redeem the same at maturity, and reinvest in the owner's name the principal amount in a new certificate having the same description in all material respects as the one redeemed. No such automatic reinvestment shall be made, however, in excess of the amount of the unexpended portion of the loan from the Rural Electrification Administration or the Rural Telephone Bank.